LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claims 1-98 **(Canceled)**

99. **(Previously presented)** An enzyme solution comprising an anti-freeze protein and an enzyme; wherein said enzyme retains enzymatic activity after at least one freeze/thaw event.

100. **(Previously presented)** The enzyme solution according to Claim 99, wherein said enzyme retains activity after more than ten freeze/thaw events.

101. **(Previously presented)** The enzyme solution according to Claim 99, further comprising a buffer.

102. **(Previously presented)** The enzyme solution according to Claim 101, wherein said buffer is zwitterionic.

103. **(Previously presented)** The enzyme solution according to Claim 99, further comprising a carrier protein.

104. **(Previously presented)** The enzyme solution according to Claim 103, wherein said carrier protein is bovine serum albumin (BSA).

105. **(Previously presented)** The enzyme solution according to Claim 99, wherein said anti-freeze protein comprises an alanine-rich motif.

106. **(Previously presented)** The enzyme solution according to Claim 99, wherein said anti-freeze protein is an AFP Type I protein.

107. **(Previously presented)** The enzyme solution according to Claim 101, wherein said enzyme solution has a pH from about 7.9 to about 8.9.

108. **(Previously presented)** The enzyme solution according to Claim 99, further comprising a polyol.

109. **(Previously presented)** The enzyme solution according to Claim 108, wherein said polyol is selected from the group consisting of sorbitol and trehalose.

110. **(Previously presented)** The enzyme solution according to Claim 108, wherein said polyol comprises sorbitol and trehalose.

111. **(Previously presented)** The enzyme solution according to Claim 99, wherein said anti-freeze protein has a concentration of from about 10ug/ml to about 200 ug/ml.

112. **(Previously presented)** The enzyme solution according Claim 99, wherein said enzyme is a DNA polymerase and the addition of said enzyme solution to an amplification reaction mixture improves the sensitivity and yield of the nucleic acid amplification reaction.

113. **(Previously presented)** A reaction mixture for use in a nucleic acid amplification reaction, comprising dNTPs and an enzyme solution according to Claim 112.

114. **(Withdrawn)** A method for enhancing the stability of an enzyme over the course of two or more freeze/thaw events, comprising the addition of an anti-freeze protein to an enzyme solution containing said enzyme prior to said freeze thaw events.

115. **(Withdrawn)** A method for increasing the sensitivity and yield of a nucleic acid amplification reaction, comprising combining a target nucleic acid sequence with at least one primer in a reaction mixture according to Claim 113 and amplifying said target nucleic acid sequence, wherein the inclusion of said anti-freeze protein increases amplicon yield and sensitivity.

116. **(Withdrawn)** An improved method for detecting a target nucleic acid sequence in a sample, comprising combining said sample with at least one primer in a reaction mixture according to Claim 113 and amplifying said target nucleic acid sequence; wherein the inclusion of said anti-freeze protein increases signal intensity and improves the signal-to-noise ratio.

117. **(Withdrawn)** An improved method for quantifying a target nucleic acid sequence in a sample, comprising combining said sample with at least one primer in a reaction mixture according to Claim 113 and amplifying said target nucleic acid sequence; wherein the inclusion of said anti-freeze protein increases signal intensity and improves the signal-to-noise ratio.

118. **(Previously presented)** A kit comprising: a solution comprising an anti-freeze protein and an enzyme.

119. **(Previously presented)** The kit of Claim 117 wherein the solution further comprises a carrier protein.